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U.S. DEPARTMENT OF COMMERCE/National Bureau of Standards



GUIDELINE FOR SOFTWARE VERIFICATION AND VALIDATION PLANS

CATEGORY: SOFTWARE
**SUBCATEGORY: VALIDATION, VERIFICATION,
AND TESTING**

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U.S. DEPARTMENT OF COMMERCE, C. William Verity, *Secretary*
NATIONAL BUREAU OF STANDARDS, Ernest Ambler, *Director*

Foreword

The Federal Information Processing Standards Publication Series of the National Bureau of Standards (NBS) is the official publication relating to standards, guidelines, and documents adopted and promulgated under the provisions of Public Law 89-306 (Brooks Act) and under Part 6 of Title 15, Code of Federal Regulations. These legislative and executive mandates have given the Secretary of Commerce important responsibilities for improving the utilization and management of computers and automatic data processing in the Federal Government. To carry out the Secretary's responsibilities, the NBS, through its Institute for Computer Sciences and Technology, provides leadership, technical guidance, and coordination of Government efforts in the development of standards, guidelines and documents in these areas.

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Abstract

This Guideline announces the adoption of the Standard for Software Verification and Validation Plans (ANSI/IEEE Standard 1012-1986) as a Federal Information Processing Standards Publication Guideline. ANSI/IEEE 1012 provides uniform and minimum requirements for the format and content of software verification and validation plans. It defines minimum tasks, inputs, and outputs for critical software (software whose failure could have an impact on safety or could cause large financial or social losses) and optional tasks; it recommends these for other software. It includes minimum requirements for test tasks and documentation. It provides direction for the management, procedural administration, and reporting for software verification and validation. This Guideline is for use by software acquirers, software managers, developers, verifiers, testers, maintainers, and end users.

Key words: analysis; critical software; documentation; evaluation; Federal Information Processing Standards Publication; life-cycle phases; minimum tasks; reporting; software testing; software verification and validation; software verification and validation plans; traceability.

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**Announcing the
GUIDELINE FOR SOFTWARE VERIFICATION
AND VALIDATION PLANS**

Federal Information Processing Standards Publications (FIPS PUBS) are issued by the National Bureau of Standards pursuant to section 111 (f) (2) of the Federal Property and Administrative Services Act of 1949, as amended, Public Law 89-306 (79 Stat. 1127), Executive Order 11717 (38 FR 12315, dated May 11, 1973), and Part 6 of Title 15 Code of Federal Regulations (CFR).

Name of Guideline. Guideline for Software Verification and Validation Plans (FIPS PUB 132).

Category of Guideline. Software. Validation, Verification, and Testing.

Explanation. This Guideline announces the adoption of the Standard for Software Verification and Validation Plans (ANSI/IEEE Standard 1012-1986) as a Federal Information Processing Standards Publication Guideline. ANSI/IEEE 1012 provides uniform and minimum requirements for the format and content of software verification and validation plans. It defines minimum tasks, inputs, and outputs for critical software (software whose failure could have an impact on safety or could cause large financial or social losses) and optional tasks; it recommends these for other software. It includes minimum requirements for test tasks and documentation. It provides direction for the management, procedural administration, and reporting for software verification and validation. This Guideline is for use by software acquirers, software managers, developers, verifiers, testers, maintainers, and end users.

Approving Authority. U.S. Department of Commerce, National Bureau of Standards (Institute for Computer Sciences and Technology).

Maintenance Agency. U.S. Department of Commerce, National Bureau of Standards (Institute for Computer Sciences and Technology).

Related Documents.

- a. Federal Information Processing Standards Publication 101, Guideline for Lifecycle Validation, Verification, and Testing of Computer Software.
- b. NBS Special Publication 500-136, An Overview of Computer Software Acceptance Testing.
- c. NBS Special Publication 500-98, Planning for Software Validation, Verification, and Testing.
- d. NBS Special Publication 500-93, Software Validation, Verification, and Testing Technique and Tool Reference Guide.
- e. NBS Special Publication 500-75, Validation, Verification, and Testing of Computer Software.

Objectives. The objectives of this Guideline are to:

- improve the management of the development of new software and the revision of existing software
- assist managers and users in acquiring and developing software that meets agency requirements
- reduce software development and maintenance costs
- reduce risks to software projects
- improve software quality.

Applicability. This Guideline is intended to provide the basic format and content for a software verification and validation plan for Federal ADP managers, software developers, verifiers, testers, and maintainers

for ensuring quality software by performing the minimum required verification and validation tasks during development, installation and maintenance. Its use is encouraged but not mandatory.

Implementation. This Guideline should be used whenever Federal departments or agencies acquire new software or undertake major revisions of existing software.

Specifications. ANSI/IEEE 1012-1986, Standard for Software Verification and Validation Plans.

Qualifications. The requirements of this Guideline are directed toward critical software (software whose failure could have an impact on safety or could cause large financial or social losses) and are recommended for other software; these requirements may be augmented or diminished according to project goals and constraints. For existing software, these requirements may be phased in according to project goals and constraints. The Guideline may be used in conjunction with or independent of other standards referenced within the specification.

Where to Obtain Copies of this Guideline. Copies of this publication are for sale by the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161. (Sale of the included specifications document is by arrangement with the American National Standards Institute.) When ordering, refer to Federal Information Processing Standards Publication 132 (FIPSPUB132), and title. Payment should be made by check, money order, or deposit account.

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